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The wonders of the spreadsheet tool for data management and insights

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CHAPTER 13

WONDERS OF THE SPREADSHEET TOOLS FOR DATA MANAGEMENT AND INSIGHTS

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Ask any student at the Singapore Management University (SMU) to name one of the most practical and useful courses offered by the university. The answer would inevitably include CAT. CAT stands for the "Computer as an Analysis Tool" course. Originally based on a course of the same title offered by the Wharton Business School, the focus of CAT was shifted to provide business students the essential practical skills and necessary “real-world” exposure to better use personal computers for resolving business problems. The course is basically centred on using the Excel spreadsheet to work on ambiguous ill-defined problems (Leong & Cheong, 2009). Over the years, three editions of a textbook have been written to cover the major topics in spreadsheet modelling emphasising the problems, principles and practice perspective (Leong & Cheong, 2015), including all the models that were built and for more than 100 problems.

As part of the course requirement, students form groups of four to five students, to complete a group project using Excel spreadsheet to build models to solve problems. A few thousand projects have been completed so far since SMU started in the year 2000. Students have helped organisations in civic clubs and in the social welfare, education, entertainment, food and beverage, healthcare and medical, manufacturing and logistics, personal and lifestyle services, business services, public services, sports and recreation, transportation, and tourism and hospitality sectors (Leong & Cheong, 2008).

In 2015, a team of four students completed a project for Social Collaborative, which is a network of skilled volunteers who help voluntary welfare organisations (VWOs) and other non-profit organisations with need assessments, programme design, strategic planning and evaluation. In this project, the students built a volunteer and VWO management system, to achieve four objectives, namely:

- Efficiently manage the track record of volunteers and VWOs on a single platform
- Provide volunteers an ease of access to view and select projects listed by VWOs
- Allow various VWOs to have access to a pool of skilled volunteers under Social Collaborative
- Encourage continual volunteerism through an engaging feedback/scoring system that fosters progression and capability building

In 2014, another team of five students completed a project for The Island Foundation (TIF), which is an international non-profit organisation that works closely with the coastal communities in the Riau Archipelago, mainly in Bintan. An Excel model was built to allow TIF to manage the performance measures of their English language programme and their financial information. Using the system, TIF would be able to:

- Track the student attendance for each of their learning centres
- Analyse the success of their programme through the attendance rate of the students
- Compare the impact of the programme between centres
- Track and analyse organisation's expenditure to forecast future budget
- Examine the cost efficiency of each centre
- Determine if they should open a centre at a new location

Excel spreadsheet is a commonly used tool in many organisations. While it is often used as a recording and simple calculation tool, its exceptional capability actually lies in data analysis and exploratory modelling. From the two examples, we can see that Excel spreadsheet models have the ability to perform data recording and data analysis, to provide insights and support decision-making, which in many cases, are considered as enormous contributions to many companies and VWOs. However, spreadsheets should not be used as a database management system for large and fast growing data, which will be more appropriately handled by database software. Also,

spreadsheet models do not have the ability to perform predictions like in data analytics and machine learning, where more advanced tools like SAS, SPSS, R, Weka, Knime, and many others, will be more suitable.

The SMU's CAT course is delivered to thousands of undergraduates each year, in Term 1 (from August to December) and Term 2 (from January to April). It is a compulsory core course for all schools, except Law & Accountancy, while 80 per cent of Accountancy students still take it as they found it an extremely useful course. For each term, the students will engage organisations to provide business problems for them to work on. They will work from September to November for Term 1, and from February to March for Term 2, to design, develop and deliver the models. These students will not be paid as it is part of the course requirement.

To engage the students, it is best for each VWO to write a short description of the problems they face, and what they want the spreadsheet model to be able to provide, in terms of the types of outputs and the decisions it can support. The contact person's email address and phone number should also be provided for easy linkup. Note that the students are very well sought after and there are usually more requests than students can handle. So, not all proposed projects will be picked up by the students, as students tend to like challenging problems that can allow them to score well in the course. So, if the problems appear too trivial, they tend not to be picked up by students.

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